

ABSTRACT OF THE DISCLOSURE

Separating and coating semiconductor dice at the wafer level to form individual chip-scale packages. In one embodiment, channels are formed in the active surface of a wafer to expose side surfaces of semiconductor dice. The surfaces of the channels are then etched to remove defects resulting from cutting. A first protective coating is deposited to seal the wafer active surface and the exposed side surfaces of each semiconductor die. Finally, the wafer is singulated along the channels to provide a plurality of individual chip-scale packages. Alternatively, material is removed from the back side of the wafer to expose the channels, and a second protective coating is applied to provide completely sealed chip-scale packages. Portions of the first protective coating may also be formed to project from the channels to anchor the second protective coating in place. In another embodiment, the first protective coating is formed without forming channels in the active surface of the wafer, and then channels are formed in the back side of the wafer.

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